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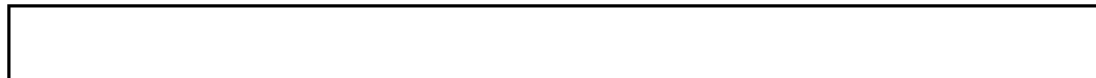
PHOTOGRAPHIC INTELLIGENCE REPORT



SODA ASH PLANT

TSINGTAO, CHINA

Declass Review by NIMA/DOD



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CIA/PIR 75051

DATE October 1966

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SODA ASH PLANT
TSINGTAO, CHINA

A modern, well laid out soda ash plant is located approximately 8 nautical miles north-northeast of the center of Tsingtao, China at 36 12N - 120 22E (Figure 2). This installation has in the past been referred to as (1) a chemical plant of undesignated type, and (2) a chemical fertilizer plant. At present, it does not appear to produce fertilizer. No facilities for ammonia production were observed in the vicinity of the plant or in the area around Tsingtao, and fertilizer production would necessarily require large amounts of ammonia. If the ammonia were economically available, the production of ammonium chloride fertilizer at this plant would be feasible.

This study was made from overflight and satellite photography covering the period from [REDACTED]

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The following is a brief description of the plant process.

A saturated brine solution is prepared by dissolving salt in water. The brine is then ammoniated to form ammonium hydroxide. After cooling, the ammoniated brine solution is treated in carbonating towers first with lean carbon dioxide from the lime kilns, to form ammonium bicarbonate and then with rich carbon dioxide from the calcining section to form a precipitate of sodium bicarbonate and a residual solution of ammonium chloride. The sodium bicarbonate is filtered out and then calcined to form soda ash (sodium carbonate) and rich carbon dioxide. In order for the process to be economical, ammonia is recovered from the ammonium chloride solution and the waste material (calcium chloride) is piped to the waste disposal area.

Listing of plant facilities (Figure 5):

- | | |
|---------------------------------------|--|
| a. Salt unloading | j. Ammoniated brine storage tanks |
| b. Salt storage | k. Cooling coils |
| c. Brine preparation building | l. Bicarbonate filtration facility |
| d. Brine storage tanks | m. Ammonia recovery building |
| e. Coke/coal storage | n. Calcining building |
| f. Limestone storage | o. Soda ash storage, packaging and shipping building |
| g. Crushing and blending facilities | p. Steam plant |
| h. Vertical lime kilns | q. Ammonia unloading and handling building |
| i. Ammoniating and carbonating towers | r. Unidentified processing building |

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Building of this plant had begun prior [] At the time, construction appeared to be in an early stage with none of the major components, except possibly the steam plant, being completed (Figure 3). [] construction throughout the plant had approached mid-stage with the completion or near completion of lime kilns, conveyors, raw material storage and handling facilities, and several support type buildings. The brine handling facilities, tower section, filtration building, calcining building, shipping and storage building, and ammonia recovery building were all in various stages of construction. Photo coverage from [] indicated that the plant was probably near an initial production phase (Figure 4) as all of the major buildings and processing facilities were completed. Some rail traffic was noted in the plant area, stockpiles of limestone and coke/coal were on hand, the steam plant was emitting vapor, and a minor amount of waste was noted in the disposal area. For the first time, on coverage dated in [] the plant was observed to be in full production (Figure 5). Also, noted on this coverage was a newly completed, unidentified processing building. [] production at the plant appears to be continuing at a high level, but no new construction or expansion of facilities were noted (Figure 6).

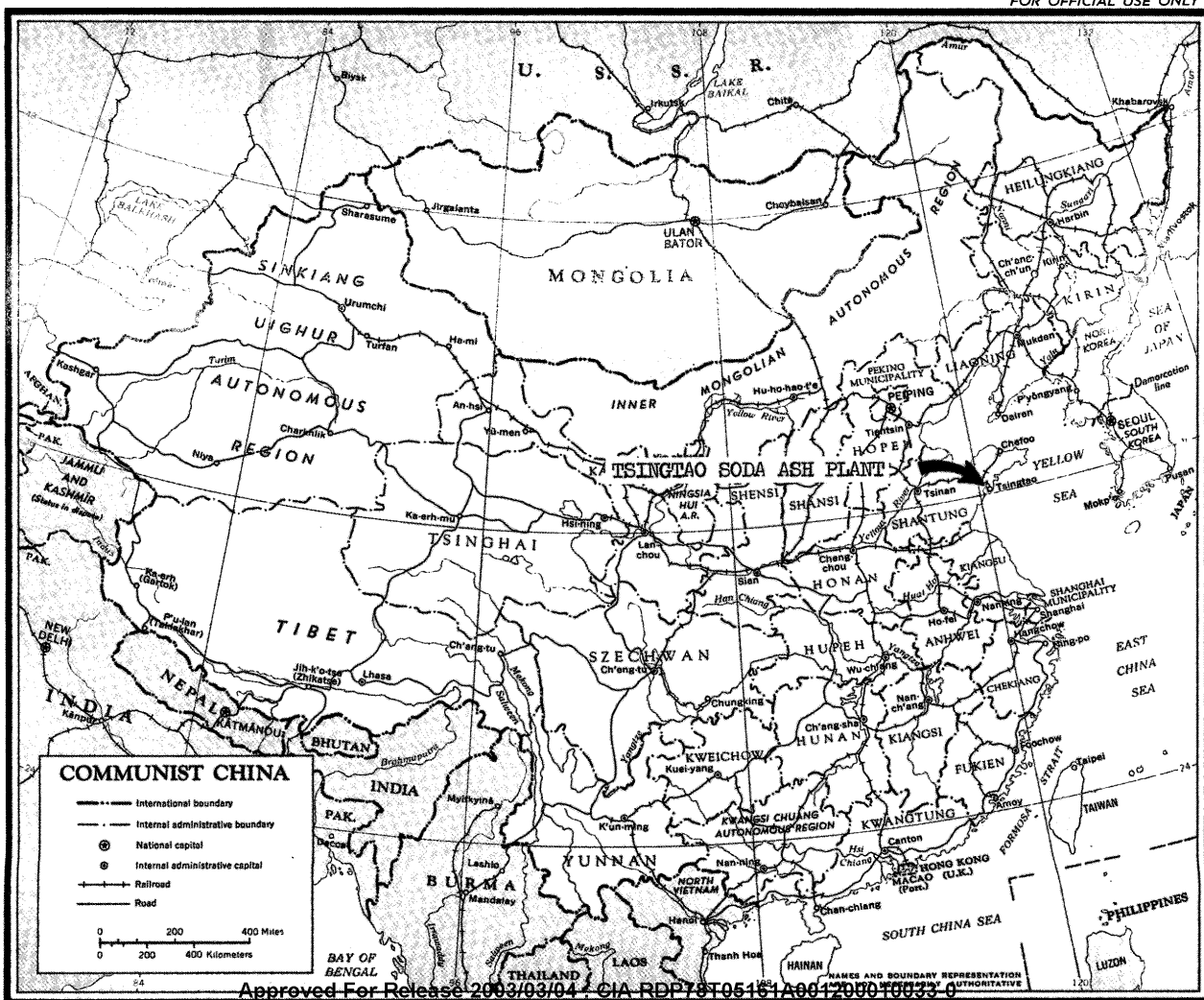
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FIGURE 1

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TSINGTAO, CHINA
36 12N - 120 22E
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FIGURE 5



SODA ASH PLANT
TSINGTAO, CHINA
36 12N - 120 22E

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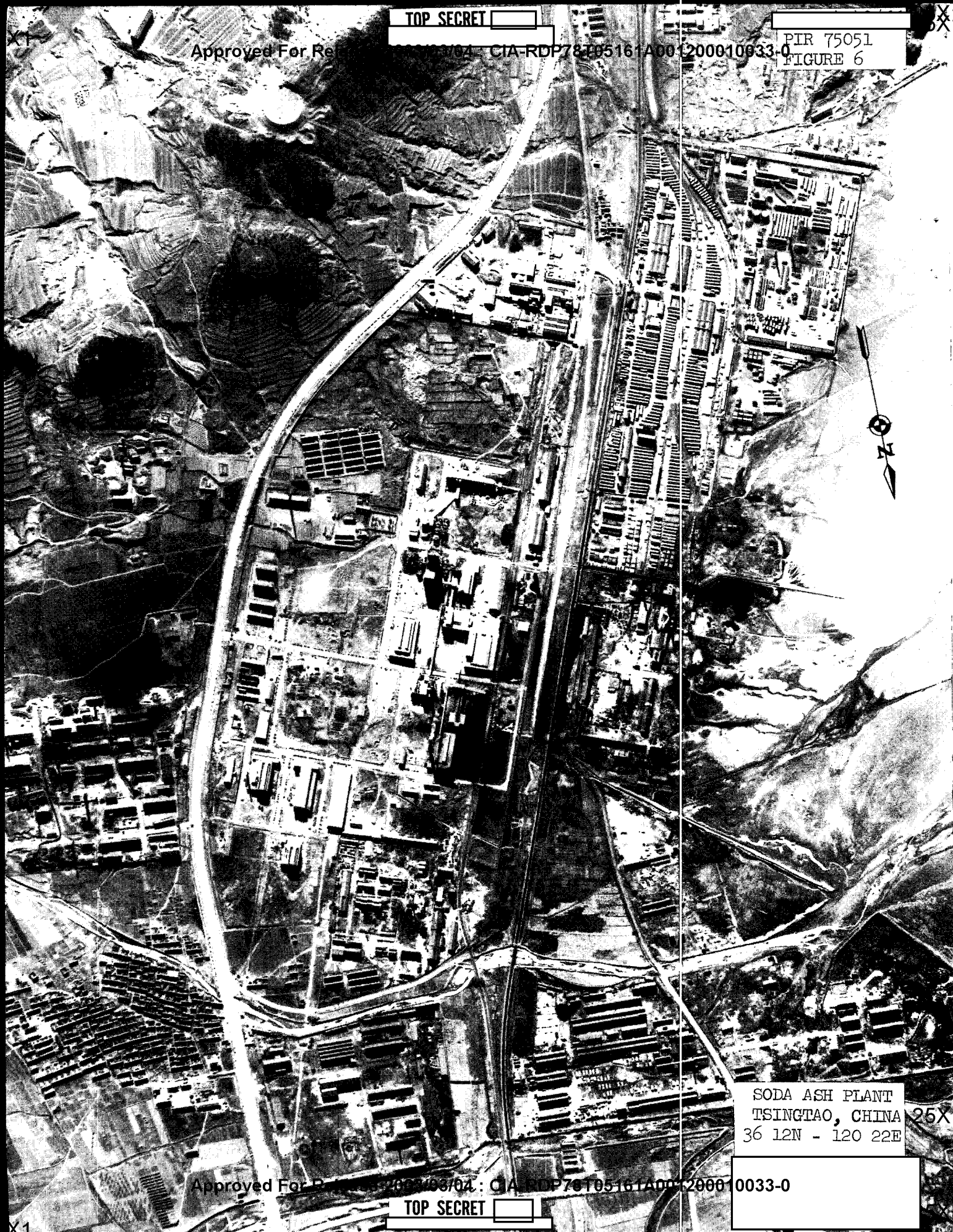
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FIGURE 6



SODA ASH PLANT
TSINGTAO, CHINA
36 12N - 120 22E

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REFERENCES

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MAPS AND CHARTS

Locator Map, China - 51543 6-65 (OFFICIAL USE ONLY)

U.S. Air Target Chart, Series 200, Sheet 0381-24HL, 3rd Edition, May 1964
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